(12) UK Patent Application (19) GB (11) 2 214 899 (13) A

(43) Date of A publication 13.09.1989

(21) Application No 8828814.7

(22) Date of filing 09.12.1988

(30) Priority data
(31) 221355 (32) 05.02.1988 (33) NZ

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(51) INT CL⁴
B65H 75/40

(52) UK CL (Edition J)
B8M MB7 M16E

(56) Documents cited
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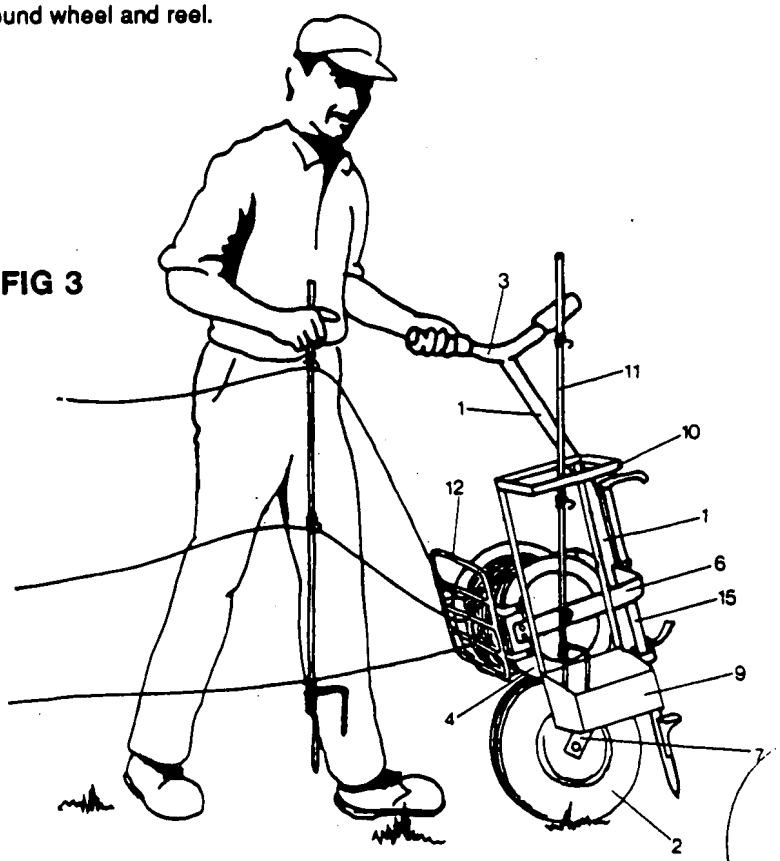
(58) Field of search
UK CL (Edition J) B8M MB3 MB6 MB7
INT CL⁴ B65H

(54) An electric fence laying out apparatus

(57) Apparatus for laying out or taking in a temporary farm fence line comprises a frame having a reel 4 for the strands of said line and a ground wheel 2 arranged to rotate the reel, by direct contact with the wound strands, to at least reel in the line. The wheel may be latched in a pivoted-down position so that the reel may rotate freely. The frame carries fencing standards 11, a strand guide 12, a ground stake 15 for anchoring the frame, and a fence energiser. An idler wheel may be inserted between the ground wheel and reel.

FIG 3



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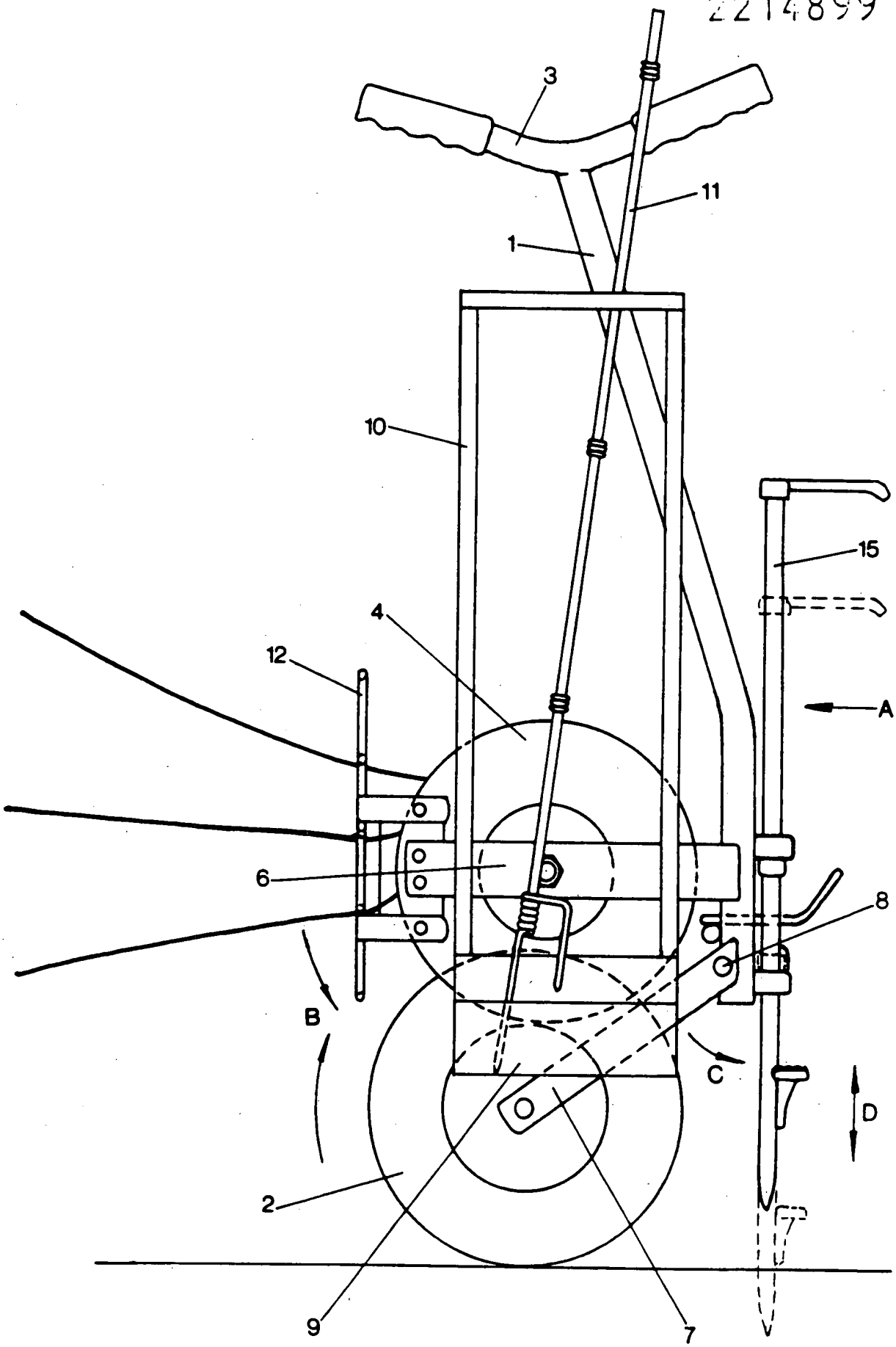

FIG 1

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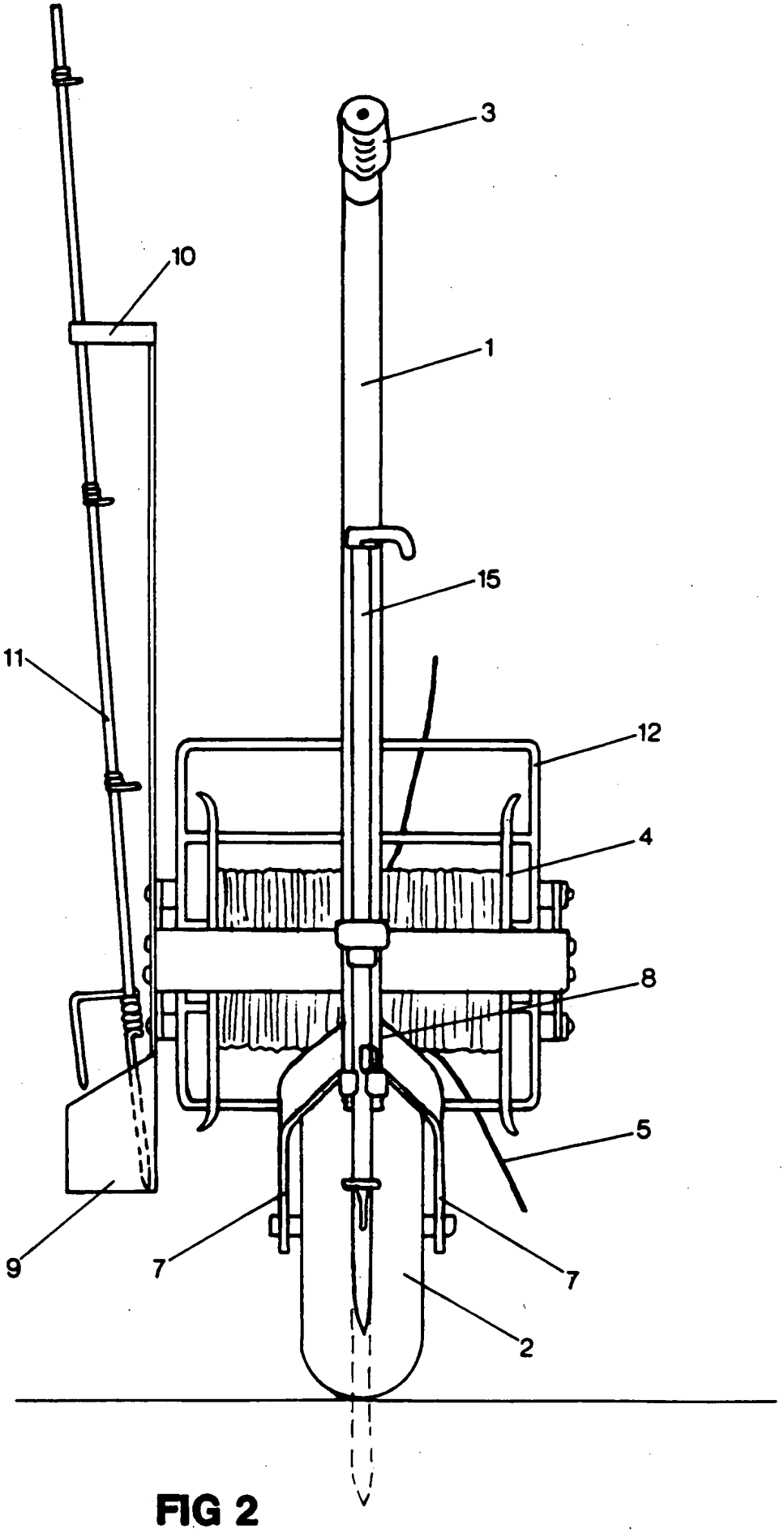

FIG 2

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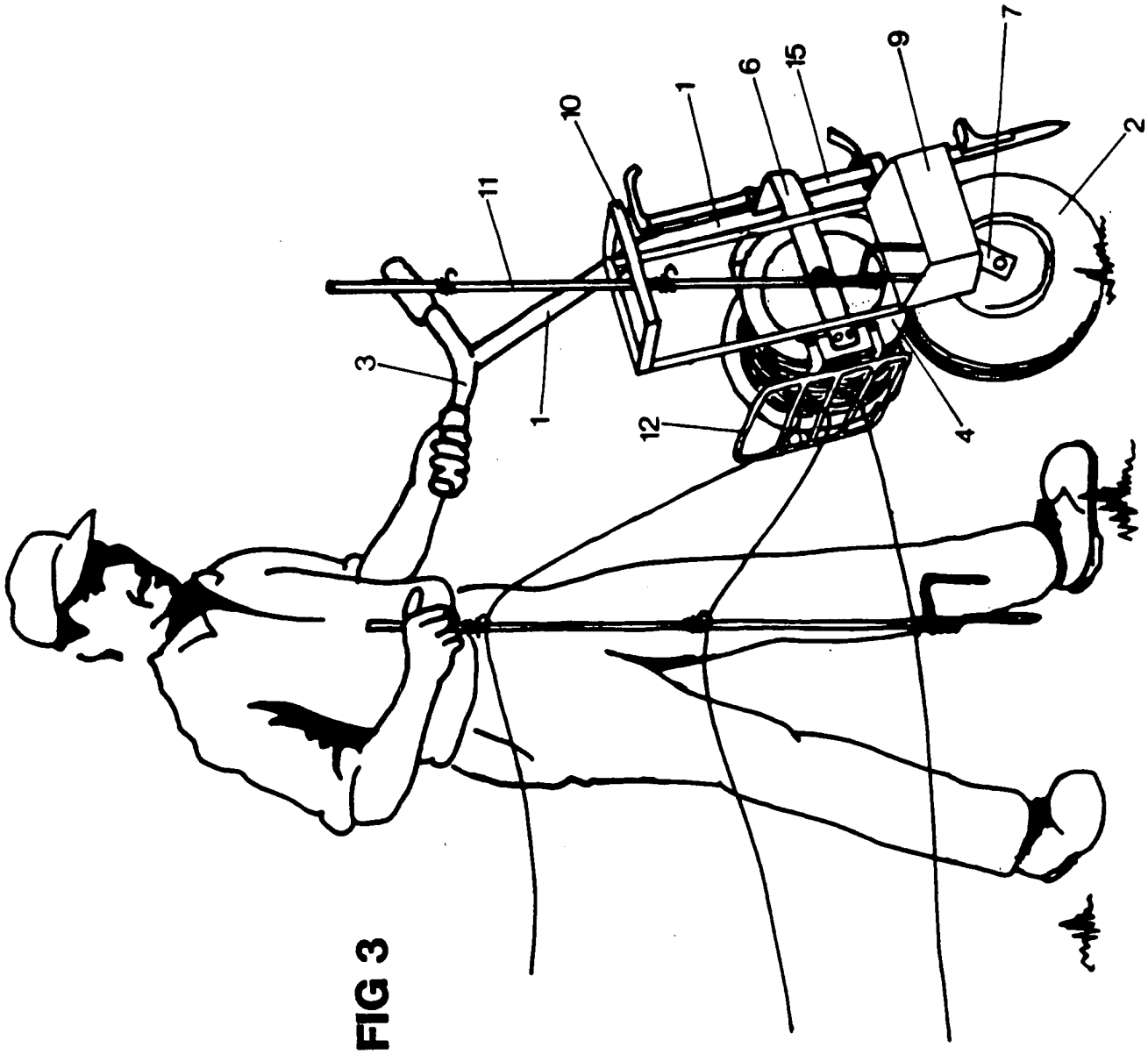

FIG 3

"An Electric Fence Laying Out Apparatus"

The present invention comprises an apparatus for laying out and/or taking in a line such as a temporary electric fence line on a farm or the like.

Electric fencing is well known for use in farming and the like, to provide a fence for containing animals for example. Electric fencing is particularly useful for providing a temporary fence, as opposed to a permanent fence comprising fencing standards permanently fixed in the ground, permanently affixed wire and the like. A temporary electric fence line is typically presently laid out by placing a number of removable standards in the ground at appropriate intervals along the line over which the fence is to extend, and then running out the one or more strands of the fence wire, which are typically 'polywire' or the like, and hooking the strand(s) onto each of the standards. To take in the fence line the wire strand(s) of the fence line must first each be unhooked from each of the standards and the strands of wire collected in and the standards then collected. The laying out and taking in of an electric fence line such as a temporary electric fence line is thus relatively time consuming.

At least one prior form of 'walk along' type apparatus for laying out and taking in an electric fence line is known, but such known form of apparatus comprises an arrangement of gears and slipper clutch, and the machine is

thus relatively complicated and also bulky and relatively more difficult to use.

The present invention provides an improved or at least alternative form of apparatus for laying out and/or taking in a line such as an electric fence line. The apparatus of the invention is particularly intended for an electric fence line but could be employed for laying out and taking in a conventional fence line or some other form of line.

In broad terms the invention may be said to comprise an apparatus for laying out and/or taking in a line, comprising a frame for said apparatus, a reel for the strand(s) of said line supported by said frame, at least one ground wheel for the apparatus depending from said frame whereby the apparatus may be manually moved along the ground over which the line is to extend, said reel being arranged to be driven by contact direct or indirect of said ground wheel with said reel whereby said reel is driven to rotate during at least reeling in of the line.

Most preferably the reel is driven by direct or indirect contact of the periphery of the ground wheel against the wound strand(s) of line on the reel, and the reel and/or

the ground wheel are so mounted to the apparatus frame to accommodate the increase or decrease of wound line on the reel during operation of the apparatus whereby said contact is maintained. Most preferably the periphery of the ground wheel contacts the wound strands on the reel directly.

Preferably the apparatus is of a generally upstanding construction and comprises a handle whereby the apparatus may be moved along by a user by pushing the apparatus while walking beside it. The apparatus may include means whereby the apparatus may be self-supported in a substantially upright position independent of the user.

A preferred form of the apparatus of the invention intended for laying out and taking in a multistand electric fence line is illustrated, by way of example, in the accompanying drawings, wherein:

Fig. 1 is a side view of the preferred form apparatus, with parts thereof shown in phantom outline,

Fig. 2 is a view of the preferred form apparatus in the direction of arrow A in Fig. 1, with parts thereof shown in phantom outline, and

Fig. 3 shows the apparatus in use in the laying out/taking in of a fence line.

The preferred form apparatus of the invention shown

in the drawings comprises a frame generally indicated at 1.

The frame mounts a single ground wheel 2 at the bottom of the frame whereby the wheel depends from the frame to stand the apparatus on the ground. The apparatus is provided with a two way handle 3 at or towards the top of the frame 1 whereby the apparatus may be manually wheeled along on the ground wheel 2 in either direction, by a user or operator of the apparatus pushing on one or other side of the handle 3 and walking along beside it, as shown in Fig. 3. In the preferred form apparatus the ground wheel 2 is a pneumatic tyred wheel and there is a single wheel, but in other forms of the apparatus there could be two or more ground wheels.

The apparatus comprises a reel 4 for the strands 5 of an electric fence line mounted to the frame 1. The preferred form apparatus is intended for laying out a three wire strand electric fence, and the reel 4 contains an amount of three separate strands of polywire or the like, but any other number of strands may be employed.

The reel 4 is journaled for rotation in members 6 extending from the major part 1 of the apparatus frame as shown. The ground wheel is mounted to the apparatus frame in forks 7 coupled to the major frame part 1 by a pivoting connection 8, such that when the ground wheel is in the

position shown in Fig. 1 the periphery of the ground wheel 2 will always contact the wound strands of the fence line on the reel 4, to drive the reel to rotate when the apparatus is moved along the ground. The arrangement is such that during operation when the ground wheel is in this position, the reel 4 is always in contact with the ground wheel 2 as shown, and as the apparatus is manually moved along the ground on the wheel 2 the reel 4 will be caused to contra-rotate by virtue of its contact with the wheel 2, as indicated by arrows B on the reel and wheel in Fig. 1. Depending on the direction of movement of the apparatus the reel 4 will thus be driven to reel out or reel in the wires 5 comprising the strands of the fence line. As the amount and diameter of wound line on the reel 4 increases, when the apparatus is being operated to take in the fence line, the ground wheel will pivot downwardly to an extent, about the pivot connection 8 by which the forks 7 carrying the ground wheel are mounted to the frame 1, in the direction of arrow C, to maintain contact with the reel, and vice versa. The driving ground wheel 2 contacts the reel 4 directly or indirectly so that the reel 4 will always be driven at the appropriate speed to reel the fence line. During winding in of the fence line, for example, as the amount of wound line on the reel increases, the reel will be driven to rotate more slowly, while during winding out of the fence line, as more line is wound out, the reel will be driven to rotate more rapidly.

In other forms of the invention other mechanisms for directly or indirectly driving the reel 4 in this manner might be employed, but the arrangement described is preferred. By indirectly driving the wheel is meant that an intermediate idler wheel or the equivalent could be used between the ground wheel and the reel, rather than any complex system of gears and clutch or the like.

The ground wheel 2 and forks 7 carrying same may pivot downwardly from the position shown in Fig. 1 so that the ground wheel is disengaged from contact with the reel 4, and be latched in this positioned by latch 18, so that when in this position the reel 4 may free-wheel as the apparatus is moved along. Rather than reeling out the fence line, when in this free wheeling mode the fence line strands may be drawn out off the reel 4 as the apparatus is wheeled along.

The preferred form the apparatus is adapted to carry a number of conventional lightweight fencing standards. Such standards are typically formed of fibreglass or aluminum and comprise a number of spaced plastic hooks or clips or the like whereby the strands of the fence line may be engaged onto the standards. The apparatus comprises a carrier comprising a platform 9 and a member 10 forming a rack for carrying the standards. Of the order of 50 standards may be carried in the preferred form apparatus. One standard is shown in the drawings at 11.

The preferred form apparatus includes means for guiding the wire strands 5 during laying out or taking in of the fence line. A guide member 12 is mounted adjacent the reel 4 on the ends of the members 6 supporting same. In the preferred form the reel carries three fence line strands and the guide member 12 has four guide holes as shown, whereby the strands of the fence wire pass through the guide member to guide same during taking in of the fence line.

The preferred form apparatus additionally comprises a stand member in the form of a ground stake 15 movable in the direction of arrows D whereby the apparatus may be self-supporting by pushing the ground stake 15 into the ground, as shown in Fig. 1. The ground stake has a handle and foot pedal for operation, and is shown inserted into the ground in phantom outline in Fig. 1.

The apparatus may also include a mounting (not shown) for carrying an energizer for the electric fence. In that case when inserted into the ground the ground stake 15 can serve to electrically earth the energiser of the apparatus.

In the preferred form apparatus shown the reel 4 is fixedly marked to the apparatus frame 1 by way of the members 6 on either side, but in an alternative arrangement the reel 4

and members 6 or the equivalent could be formed as a separate detachable unit, so that the reel could be used for other purposes.

The preferred form apparatus is utilised to lay out an electric fence as follows. A number of standards are loaded onto the apparatus. The three wire strands on the reel 4 are passed through the guide member and attached to the first standard forming the end of the fence line and then the apparatus is pushed along by a user walking beside the apparatus, by way of the handle 3, along the line over which the fence is to extend. During movement of the apparatus rotation of the wheel 2 will cause rotation of the reel 4 to reel out the strands 5 of the fence line. Alternatively the reel may be allowed to free-wheel during reeling out of the fence line. At intervals the operator stops and removes a standard carried by the apparatus and inserts same into the ground, and clips the fence strands 5 onto same. This may be typically carried out as a "one-handed" operation. At the end of the fence line the apparatus may be stopped and the ground stake 15 inserted into the ground so that the apparatus is stood to be free standing. When it is desired take in the fence line in, the apparatus is moved in the opposite direction, in a similar fashion, by pushing on the handle 3 to reel in the fence. The strands 5 are guided by the guide member 12 back onto the reel 4 during reeling in of same.

With the apparatus of the invention a temporary electric fence line may be laid out/taken in with ease. The apparatus may be utilised to lay out an electric fence for containing animals, for preventing sheep from entering a field containing crops such as turnips, swedes or the like, as an alternative to the netting which is typically employed for this purpose. The apparatus is of a simple and robust construction and is manufactured more economically then prior known forms of apparatus.

The foregoing describes the invention including a preferred form thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope hereof, as defined in the following claims.

CLAIMS

1. An apparatus for laying out and/or taking in a line, comprising a frame for said apparatus, a reel for the strand(s) of said line supported by said frame, at least one ground wheel for the apparatus depending from said frame whereby the apparatus may be manually moved along the ground over which the line is to extend, said reel being arranged to be driven by contact direct or indirect of said ground wheel with said reel whereby said reel is driven to rotate during at least reeling in of the line.

2. Apparatus as claimed in claim 1, wherein the reel is driven by direct or indirect contact of the periphery of the ground wheel against the wound strand(s) of line on the reel and wherein the reel and/or the ground wheel are so mounted to the apparatus frame to accommodate the increase or decrease of wound line on the reel during operation of the apparatus whereby said contact is maintained.

3. Apparatus as claimed in claim 2, wherein the periphery of the ground wheel contacts the wound strands on the reel directly.

4. Apparatus according to any one of the preceding claims, wherein contact between the reel and ground wheel is disengagable whereby the reel may free-wheel independent of the ground wheel during reeling out of the line.

5. Apparatus according to claim 4, wherein the reel is carried by the apparatus frame immediately above the ground wheel and wherein the ground wheel is mounted to the apparatus frame such that the ground wheel is movable between engagement of the ground wheel and the reel for driving thereof and disengagement of the ground wheel and the reel for free wheeling of the reel.

6. Apparatus according to any one of the preceding claims, wherein the apparatus is of a generally upstanding construction and comprises a handle whereby the apparatus may be moved along by a user by pushing the apparatus while walking beside it.

7. Apparatus according to any one of the preceding claims, including guide means adjacent the reel for guiding the strand(s) of line during winding onto or from the reel.

8. Apparatus according to any one of the preceding claims, wherein the apparatus includes means whereby the apparatus may be self-supported in a substantially upright position independent of the user.

9. Apparatus according to claim 8, wherein said means comprises a sliding stake member carried by the apparatus frame which may be entered into the ground for supporting the apparatus.

10. Apparatus according to any one of the preceding claims, wherein said line comprises a multi-stranded electric fenceline.

11. Apparatus according to claim 10, wherein the apparatus comprises a carrier for a number of fencing standards for the fence line.

12. Apparatus according to either of claims 10 and 11 when dependant directly or indirectly on claim 9, wherein the apparatus carries an energiser for the electric fence line and wherein said sliding stake when entered into the ground also forms an earth connection for the fence line.

13. Apparatus for laying out and/or taking in an electric fence line, substantially as described herein with reference to the accompanying drawings.

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